

Name _____

Locating the Epicenter of an Earthquake

Three different seismograph stations (A, B, and C) recorded an earthquake. Follow the procedure for Inquiry 12.3 on pages 148-151 in your book to complete the following lab.

A. Look at the graph in Figure 12.8 on page 149. To learn how to use the graph, answer the questions below.

1. If it took 4 minutes for the first P-wave to arrive at the seismograph station, how far away is the earthquake's epicenter? (Hint: Look on the P-wave curve.) _____
2. If the seismograph station were located 2500 km from the earthquake's epicenter, how long would it take the P-wave to arrive? _____
3. How long would it take the S-wave to travel 2500 km and reach the seismograph station? _____
4. Using 2500 km, which wave traveled faster, the P-wave or the S-wave? _____
5. At 2500 km, how many minutes elapsed between the time the P-wave and S-wave arrived at the station? _____

B. Answer the questions below using the data in Table 1.

6. In what three cities was the earthquake recorded? _____
7. When did the P-wave first arrive at Station A (Sitka, Alaska)? _____
8. When did the S-wave arrive at Sitka? _____
9. How many minutes elapsed between the time the P-wave reached Sitka and the time the S-wave reached Sitka? _____

C. Look at the P and S-wave arrival time for Stations B (Charlotte) and C (Honolulu). Calculate the difference between these wave times and RECORD them in the "S-wave minus P-wave" Column of your table (*).

Table 1: Earthquake Data

Seismograph Station	Time of Arrival at Station		S-wave minus P-wave *	Distance to the Epicenter (km) **
	P-wave	S-wave		
A. Sitka, Alaska	8:07	8:11	4 minutes	2500 km
B. Charlotte, NC	8:08	8:13		
C. Honolulu, Hawaii	8:09	8:15		

D. Use the procedure explained in steps 8-11 of your book to find out how far the earthquake's epicenter was from each station. RECORD these distances in the last column of Table 1 (**).

E. Use the procedure explained in steps 12-15 of your book to mark the distance from each seismograph station to the earthquake's epicenter on the map below.

F. Locate the point where all three circles intersect (or come closest to intersecting) and mark this with a STAR. This is the epicenter of the earthquake.

G. Reflect on the importance of the lab by answering the following question in a few complete sentences:

- How does knowing where earthquakes occur help people reduce the risks associated with future earthquakes?